

TRANSMISSION LINE TO WAVEGUIDE TRANSITION STRUCTURES

ABSTRACT OF THE DISCLOSURE

Disclosed are planar structures for coupling electromagnetic signals between planar transmission lines and waveguides. A preferred exemplary structure comprises a shielded patch antenna and one or more capacitive diaphragms disposed adjacent to the patch antenna. This structure is advantageous to MMIC modules in connecting from a planar transmission line of a substrate carrying an MMIC to an external waveguide without the need of a non-planar back metal short, which is normally essential to avoid back scattering from waveguide and also normally needed to achieve impedance matching. In structures according to the present invention, a patch antenna radiates into the waveguide while the antenna's ground plane reduces back scattering from waveguide.

The one or more capacitive diaphragms provide impedance matching between the microstrip and the waveguide.